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Survey on Studies of Understanding and Producing of Metaphor

Kazunori Okamura（0910902）

School of Information Science,
Japan Advanced Institute of Science and Technology

We are engaged, through language in daily life, in a variety of activities such as recognition of the outside world, acquisition of experience and knowledge, representation of ideas and deepening of mutual understanding among people.

Such ordinary language realizes stable communications despite the change of words or meanings in culture and custom of the era.

It is thought that one way to realize these is metaphor or simile. A metaphor or a simile has a function to liken a concept to another one. They open up a new world. They create a new interpretation, and expand knowledge or experience, and make it easy to share a new knowledge.

Such metaphor and simile exist in large numbers. For example, "man's heart is a computer," "life is a drama," "an argument is war," and "you are my sun" are metaphor. "life is like the trip without a compass" and "life seems to be the flow of a river" are simile. Like "A is B" or "A is like B," it is an expression to liken A to B.

Metaphor is thought to be a function in thinking activities and knowledge construction infrastructures. Therefore, metaphor is an important phenomenon for revealing mental activities and linguistic activities. Also, metaphor is thought to be an important function for linguistic evolution and intelligence evolution. How is metaphor produced and understood?

How do we understand metaphorical meanings as quickly and automatically as we understand literal meanings?

The fields of linguistics and cognitive psychology initially claimed that a literal interpretation of a sentence is done prior to a metaphorical interpretation of that. After that, over the past 40 years several theories on understanding of metaphor have been proposed. They are the feature comparison theory to compare features of two concepts, the structural comparison theory to compare structures of two concepts, and the category theory to use categories which include two concepts. Theories that make metaphor conventional and theories to produce metaphor were also proposed.

Based on the above theories on understanding of metaphor, the field of natural language processing proposes several computational models which use dictionaries based on relevance theory, associative concept dictionary or probabilistic concept structure.

This paper describes survey of studies in linguistics and cognitive psychology fields on understanding and producing metaphor. Especially, this paper is expected to help persons who study metaphor in the natural language processing field.